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SUBJECT—

# TITLE

PRELIMINARY REPORT
1946 BARK BEETLE SURVEY

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Recording Areas Where Dangerous and Potentially Dangerous Infestations of the Mountain Pine Beetle are Present

by

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Forest Insect Laboratory
Coeur d'Alene, Idaho
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## INTRODUCTION

Through an allotment of funds from the United States Forest Service, a program of forest insect damage surveys was made possible for the 1946 season. This project, which was under the direction of the Forest Insect Laboratory at Coeur d'Alene, had as its objective the covering of as much of the white pine areas of Idaho and Montana as possible.

This report will record only those areas where serious mountain pine beetle infestations were recorded, or where the potentials were sufficient to warrent a thorough investigation in 1947. A complete report of this survey showing all areas covered will be submitted at an early date.

The organization of this project called for two small mobile crews of three men each, which were under the leadership of temporary but experienced men. These leaders had had several years experience on insect control and survey projects, and had both served in this capacity on previous laboratory projects. Unfortunately, this organization which under existing circumstances could not be bettered, left much to be desired. Although the data obtained can be accepted at its face value, the administration of the crews was not as efficient or as effective as it should have been. This is a condition which it is trusted can be corrected in future operations. Furthermore, these crews were not immune to the marked turn over of labor which was so prevalent during the past season. It is believed there will be an increased stability in this class of personnel during the coming season.

Unfortunately this loss of labor prevented the completion of the work as planned, prior to the occurrence of non-work weather. This failure to complete the planned tasks is regretted, as some areas were missed for which data should have been obtained. The following brief descriptions of areas harboring serious and potentially serious infestations presents the mountain pine beetle situation in white pine as understood at this time.

KOOTENAI NATIONAL FOREST

North Fork of Keeler Creek Unit

Size of area, 1,800 acres. Average D.B.H. 14".

Survey sample, 34.5 acres. Estimated age, 140 years.

Percent of area covered, 1.9. Estimated number of infested trees, 419.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 20.1 | 56.7 | .23 | 1.1 | .43 | 2.1 | 2.2 | 10.9 |

The survey of this area was made on August 8 and 12th. As at that time the 1946 attack period was not complete, the data depicting the severity of the existing infestation can be considered as conservative. This position is supported by the character of last years loss (1945 attacks) which indicate the existence of a more serious situation. The 1945 attacked show a far heavier infestation and the attacked trees occurred in small groups of 4 or 5 to as many as 7.

It was understood that logging operations of the J. Neils Lumber Company were to be resumed within this area in the fall of 1946, and that an effort would be made to remove the infested trees.

Pete Creek Unit

This area is considered as being in two parts which lie to the north and to the south of Beetle Creek. North of Beetle Creek is where past losses have been so severe, and where past control operations have been conducted. A large percent of the white pine stand within this area has been destroyed during the past 20 years. The survey of these two

areas was conducted prior to the end of the attack period, so it is quite possible that the actual picture is not revealed.

Area South of Beetle Creek

Size of area, 2,180 acres. Average D.B.H., 15.

Survey sample, 15 acres. Estimated age, 160 years.

Percent of area covered, .7. Estimated number of infested trees, none.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 16.6 | 58.5 | None | None | .07 | .40 | .73 | 4.46 |

Although the sample obtained is small, it is considered as presenting an accurate picture of conditions within this area. Past losses within this portion of the Pete Creek drainage have always been light.

Area North of Beetle Creek

Size of area, 700 acres. Average D.B.H., 16".

Survey sample, 11 acres. Estimated age, 160 years.

Percent of area covered, 1.6. Estimated number of infested trees, 191.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 21.3 | 64.0 | .273 | 1.3 | .18 | .85 | 1.8 | 8.55 |

Although the data do not show an overly severe infestation (.273 of a tree per acre) it is an added toll to an already badly depleted timber stand. It is also quite possible that the figure as shown is low. The existence of this infestation following the past two seasons of

control would seem to be a rather strong denunciation as to the benefits of artificial control. In reality it is considered as being quite to the contrary.

## KANIKSU NATIONAL FOREST

No serious infestations of the mountain pine beetle were recorded within the white pine stands of the Kaniksu National Forest. There are, however, some areas where the potentials of the situation must be recognized and necessary action taken. It is believed that the following areas warrant consideration in this report.

### Experiment Station Unit

It is regretted that our survey data do not permit a complete description of conditions within this area. Unfortunately, our crews were not equipped to obtain such detailed information.

There are some beetle infested trees about one-half mile above the Experiment Station headquarters. This infestation was considered as having originated in and around existing beaver ponds. Of the infested trees recorded none were below these ponds.

In Canyon Creek a number of small white pine trees were listed as showing red and discolored foliage. There were light attacks of the mountain pine beetle in some of these trees. In others there was no evidence of a causal agency. It is believed that this situation may be comparable to the Cedar and Pinerch Creek areas on the Coeur d'Alene and Kaniksu National Forests. During the past few years there has been a great deal of concern expressed as to the cause of the condition recorded on these two areas. It is hoped that the action recently taken at the Silvicultural meeting in Missoula, will serve as an entering wedge in obtaining an answer to this problem.

Size of area, 500 acres. Average D.B.H. --.

Survey sample, 88. Estimated age, 100.

Percent of area covered, 11.0. Estimated number of infested trees, 136.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| -- | -- | .17 | -- | .45 | -- | -- | -- |

Before consideration is given to the beetle infestation within this area, the other factors involved should be evaluated.

Nickelplate Unit

This unit lies along the north side of Nickelplate ridge. The terrain is moderately steep and covered with brush and a young stand of reproduction of which about 60 percent of the trees are white pine. Of 47 recently dead and dying white pine trees examined, approximately half of them showed no evidence of a causal agency. Here again conditions exist which would seem quite comparable to the Cedar and Bismarck Creek areas. The insect problem is not considered as being of importance within this area.

Size of area, 300. Average D.B.H. --.

Survey sample, 60. Estimated age, 80.

Percent of area covered, 20.0. Estimated number of infested trees, 235.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| -- | -- | .78 | -- | .9 | -- | -- | -- |

Big Meadow Unit

This area is of a rather level terrain, and consists of timbered islands surrounded by meadow lands. These islands were cut over some years ago and are now covered with reproduction, brush fields, and stands of second growth fir, white pine, larch, and spruce. In parts of sections 26, 27, 34, and 35, T. 59N., R. 5W., there is an active infestation of the mountain pine beetle in small diameter white pine. No infestation was recorded in the other portions of this area.

Size of area, 1,700 acres. Average D.B.H., 12".

Survey sample, 35.4 acres. Estimated age, 120.

Percent of area covered, 2.08. Estimated number of infested trees, 384.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 11.2 | 21.4 | .226 | 2.08 | .51 | 4.6 | 2.03 | 18.1 |

As this examination was made quite early in July, the infestation can be more severe than indicated.

Past losses as shown by red-tops and standing snags amount to nearly 23 percent of the residual stand. Although no action is recommended at this time this situation must be thoroughly investigated during the coming season.

Bismark Meadows Unit

This small area supports a heavy stocking of young timber of which about 70 percent is white pine. It is regretted that again these data were taken prior to the completion of the seasonal attack period. However, sufficient infestation was recorded to indicate the existence of an infestation which can become a severe threat to the white pine within this area. A thorough examination should be made of this area during the coming season.

Size of area, 200 acres. Average D.B.H., 14.

Survey sample, 32 acres. Estimated age, 100.

Percent of area covered, 16.0. Estimated number of infested trees, 31.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| -- | -- | .156 | -- | -- | -- | -- | -- |

## Upper Cougar Creek Unit

The Upper Cougar Creek unit includes all of the white pine area within the drainage above Dismal and Upper Gorge Creeks. This area has supported an "up and down" infestation of the mountain pine beetle since 1930, which is as far back as our records go. During this period the annual loss has varied from .032 to as much as .179 of a tree per acre. Although this loss has not seemed severe, during this 10 year period it has resulted in the destruction of 3,302 trees. The recorded 1946 infestation is considerable higher than the average of past losses, however, there were a few years when the loss was quite comparable.

Size of area, 3,700 acres. Average D.B.H., 15.

Survey sample, 58 acres. Estimated age, 150 years.

Percent of area covered, 1.6. Estimated number of infested trees, 574.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 19.2 | 26.8 | .155 | .81 | .33 | 1.70 | 1.24 | 6.5 |

This is a situation where a 100 percent treatment of all infested trees is warranted. This action to preserve the residual stocking of white pine until such time as the area can be partially logged, and intensive management practices maintained.

## Lower Flat Creek Unit

As only a small amount of data was obtained from this area, its detailed accuracy can be questioned. Regardless of this question it indicates the existence of a situation which cannot be disregarded. Within this rather large area there has been a constant loss of white pine. During the period from 1930 to 1939, a total of 4,080 trees were killed. The estimated 1946 loss is far more serious than for any year of which we have record. Although the possibility of inaccuracies resulting from the small sample obtained is fully recognized, a loss of the severity recorded is not at all impossible.

Size of area, 4,120 acres. Average D.B.H., 15".

Survey sample, 10.6 acres. Estimated age, 120.

Percent of area covered, .26. Estimated number of infested trees, 1,553.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 20.5 | 30.1 | .377 | 1.84 | .094 | .46 | .566 | 2.77 |

If either direct or indirect control measures were possible for this area, additional information should be obtained early in the spring, before final action is taken.

Omaha Creek Unit

This unit includes the Omaha Creek drainage, which is but a part of the area previously considered as the Taylor's Unit. The timber stand within this drainage is young, but for a number of years it has been considered as being of low vigor. Past losses within this area have been heavy, but unfortunately data are not available for this portion of the Taylor's unit to permit a comparison with past losses. As stated, there are portions of this area where the timber stands have for some time been considered as being of low vigor. It is believed that although the mountain pine beetle has been and is an important factor in the destruction of this timber, there are other phases of the problems which should be considered. As a further complication of the present situation, a severe blow-down occurred during the 1945 season. The white pine trees which were tipped over by this storm have been heavily infested by the mountain pine beetle. Such situations usually contribute to an increase in mountain pine beetle populations.

Size of area, 1,480 acres. Average D.B.H., 13".

Survey Sample, 28. Estimated age, 80 years.

Percent of area covered, 1.9. Estimated number of infested trees, 1,428.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 25.4 | 30.1 | .965 | 3.8 | .464 | 1.8 | 3.18 | 12.5 |

The preceding tabulation reveal the seriousness of the infestation within the area. As windfalls are estimated as comprising about 800 of the 1,428 infested trees recorded, a marked increase in the loss of standing trees in 1947 can be expected. The infested windfalls are located in the lower portion of the drainage.

Indian Creek Unit

This area, also a part of the Taylor's Unit, is divided into two sections, with the data presented in separated tabulations. This division was considered necessary because of the difference in the terrain involved.

Area I (All white pine type in Indian and Barrymore Creeks)

Size of area, 1,420 acres. Average D.B.H., 14.

Survey sample, 19.6 acres. Estimated age, 120 years.

Percent of area covered, 1.4. Estimated number of infested trees, 579.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 23.5 | 30.5 | .408 | 1.74 | .357 | 1.52 | 1.68 | 7.17 |

Most of the infested trees in Barrymore Creek were found along the Creek bottom. However, in the Indian Creek drainage the infested trees occurred on the side hills, near the upper end of the unit. In most instances the insect broods within the infested trees were rather light, with but few so called normal heavy attacks. There was a severe blow-down in this area in 1945 which has and will contribute to the seriousness of the present situation.

Area II (South ridge of Indian Creek)

This isolated small area of heavy infestation is located on the ridge between the second south fork and the main Indian Creek in parts of sections 6, 7, and 12, T. 50N., R. 2 and 3E.

The timber is primarily of young or second growth with an occassional mature tree along the creek bottom. A blow-down about 1/2 mile long and a maximum of eight chains wide extends along the Indian Creek side of the ridge and near the creek bottom. Data for this area is as follows:

Size of area, 240 acres. Average D.B.H. 14".

Survey sample, 18.2 acres. Estimated age, 100 years.

Percent of area covered, 7.6. Estimated number of infested trees, 317.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 38.3 | 27.6 | 1.32 | 3.44 | .44 | 1.15 | .99 | 2.58 |

This is a rather severe concentrated infestation, which obviously can develop into more serious destructive proportions than exist at this time.

A summary of the Omaha and Indian Creek infestations as compared to past losses within the Taylor Units of which they are a part, show the following. From 1929 to 1942, the loss varied from .017 to .485 of a tree per acre. The total loss for this period was 8.154 tree or an average of 582. The years of heaviest loss were in 1938 and 1939 when 1,358 and 1,319 trees were killed. The recorded 1946 loss within the two areas described is but 896 trees, however, these two areas do not include all of the Taylor's Unit. Control measures were conducted in 1929 (402 trees), 1931 (534 trees) and in 1937 (1,050 trees). These control operations can be considered as being based upon the so called "hot spotting" principle. Although this technique did not eliminate the infestation, it did serve to keep the insect population down to where the destruction which has occurred in other areas, did not take place.

Clay Creek Unit

There has been a rather severe loss of white pine as a result of bark beetle activity within this area. From 1929 to 1942 the total loss has been 7,285 trees or an average for the period of 519. During this period control measures were instituted in 1929, 1932, and 1941, at which time 2,034 trees were treated. The loss as recorded for 1946 compares quite closely with the average of past losses.

Size of area, 2,320 acres. Average D.B.H., 14".

Survey sample, 45.6. Estimated age, 160.

Percent of area covered, .64. Estimated number of infested trees, 610.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 41.3 | 42.7 | .263 | .64 | .438 | 1.06 | 7.81 | 18.69 |

Although the control operations as conducted can be considered as contributing materially to the existence of the present timber stand, attention is directed to the past loss as indicated in the percent of green white pine stands killed. This loss as indicated by the standing white pine snags of trees killed by beetles is considered as representing a period of not more than 18 years. This is considered as a conservative estimate.

Can Creek Unit

Available records record the existence of a more or less severe infestation within this area since 1929. During this period the loss varied from .018 to .651 of a tree per acre, with an average loss of from 1929 to 1941 of 438 trees or a total of 5,704. The loss recorded for the 1946 season is 675, which is above the average loss, but below the years of heaviest loss which occurred in 1929 (1,147 trees) and 1938 (1,146 trees).

Size of area, 1,710. Average D.B.H., 12".

Survey sample, 93. Estimated age, 150.

Percent of area covered, 5.3. Estimated number of infested trees, 587.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 21.9 | 34.7 | .333 | 1.50 | .69 | 3.15 | 1.84 | 8.38 |

Within this unit on an area of about 50 acres in the southwest 1/4 of section 35, there is a rather heavy concentration of 1946 infestation. Most of the infested trees are in a narrow strip about 21 chains long and 5 chains in width. Data secured from this small area shows the following condition.

Size of area, 50 acres. Average D.B.H., 16".

Survey sample, 50 acres. Estimated age, --.

Percent of area covered, 100. Estimated number of infested trees, 88.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 24.0 | 19.0 | 1.76 | 7.33 | 2.0 | 8.33 | -- | -- |

As the data for this small area were not included in the figures presented for the Can Creek Unit, they would raise the total number of infested trees to 675 trees. There is some loss of white pine within this area which cannot be attributed to bark beetles.

West Fork Unit

Although past losses have not been overly severe within this unit, there has been a persistant infestation, which from 1929 to 1942, destroyed 6,396 trees, or an average of 487. Although the data obtained for this area shows the highest infestation of all the Steamboat areas, it is still much higher than the average of past losses. A rather heavy concentration of infestation is present around the Steamboat Lookout, with lighter infestations in the Beaton Brook and in the upper end of the West Fork. In reality the one around the lookout and in the Beaton Brook drainage is not a part of the West Fork Unit but belongs to the Forks-Cabin area.

Size of area, 3,960 acres. Average D.B.H., 14.

Survey sample, 55 acres. Estimated age, 140.

Percent of area covered, 1.4. Estimated number of infested trees, 796.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 28.8 | 51.8 | .20 | .7 | .18 | .63 | 2.9 | 10.0 |

Forks Cabin Unit

Past losses of white pine have been higher within this unit than in any other portion of the Steamboat drainage. The larger acreage to a large extent explains this difference. From 1929 to 1942 inclusive, a total of 17,751 trees were killed by beetles. This figure represents an annual loss of 634 M.B.F. or 116 B.F. per acre. During this period 3,888 trees were treated during four control operations, which reduced subsequent losses proportionately.

Although the 1946 infestation is distributed throughout the area there are concentrations near the Steamboat Lookout, in Long Tom Creek, and along the north side of Cabin Creek. The 1946 attacked trees occur as single individuals up to as many as five or more in groups. Most of the attacks seem to be on dry open exposures.

Size of area, 3,720 acres. Average D.B.H., 15.

Survey sample, 103 acres. Estimated age, 160.

Percent of area covered, 2.77. Estimated number of infested trees, 2,530.

| Green Trees Per Acre | | Mountain pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 30.7 | 41.3 | .680 | 2.21 | .631 | 2.06 | 7.16 | 22.3 |

Downey Creek and Yellow Dog Creek Units

Unfortunately weather conditions prevented the obtaining of an adequate sample from both the Yellow Dog and Downey Creek units. The data obtained was significant for the area covered but it can be applied only to the areas in the lower portion of the two drainages. As a result, the data are presented as showing the status of the infestation in a greatly reduced acreage. No information is available for the upper portions of these two drainages.

Past losses of white pine as a result of bark beetle activity have been extremely heavy within these two units. From 1929 to 1945 inclusive, the average annual loss has been 2,524 trees, with a total for the period of 42,916. This is an annual loss of 1,262 M.B.F. During six years of control a total of 9,697 trees were treated. This work did not eliminate the beetles, or prevent further losses, but it did seem to hold in check what would otherwise have been a devastating outbreak.

Downey

Size of area, 2,720 acres. Average D.B.H. 14.4.

Survey sample, 70.8 acres. Estimated age --.

Percent of area covered, 2.60. Estimated number of infested trees, 4,534.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 45.7 | 18.8 | 1.67 | 3.64 | 1.44 | 3.14 | 10.3 | 22.54 |

Yellow Dog Creek Unit

Size of area, 1,880 acres. Average D.B.H. 16".

Survey sample, 31.4 acres. Estimated age, --.

Percent of area covered, 1.67. Estimated number of infested trees, 4,493.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 54.6 | 23.2 | 2.39 | 4.37 | 2.50 | 4.66 | 11.6 | 21.63 |

As stated the data obtained for this type of an infestation is not considered as being adequate. Although the estimated number of 1946 attacked trees appears to be high, one may be assured that the existing infestation is of sufficient severity to warrant any attention that can be given to it.

Yellow Dog River Unit

The history of past losses of white pine within this area do not vary greatly from that of the other units discussed. From 1929 to 1942 inclusive, a total of 21,564 trees were killed by the mountain pine beetle. This is an annual loss of 1,268 trees, or 6% M.B.F. During this period 7,818 trees were treated in seven different projects.

It is regretted that the data obtained from this area were not in sufficient quantity to provide an unquestionable estimate of the 1946 infestation. However, it was sufficient to show that a potentially dangerous situation exists, which will warrant all considerations.

Size of area, 2,140 acres. Average D.B.H. 14".

Survey sample, 26.0 acres. Estimated age, --.

Percent of area covered, 1.31. Estimated number of infested trees, 535.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 43.07 | 36.79 | .25 | .58 | .57 | 1.33 | 11.18 | 25.95 |

Attention is directed to the percent of the green white pine stand that has destroyed, as indicated by the standing snags. As stated, these snags are considered as representing an 18 year loss. This period is conservative, as it is believed that 15 years would be a more accurate figure.

Sissons Unit

The situation as described for this area is also a case of history repeating itself. A total of 25,852 white pine trees were killed within this area by beetles during the period from 1929 to 1945. This is an annual loss of 1,521 trees or 760 M.B.F. During eight seasons of control a total of 8,388 trees were treated which could only have contributed to a material reduction of subsequent losses. The estimated 1946 loss may be in excess of what is actually present, as the survey sample obtained was too small for assured accuracy. However, one may be assured that the actual situation is sufficiently serious to warrant all possible consideration.

Size of area, 4,700 acres. Average D.B.H. 14.0.

Survey sample, 50.2 acres. Estimated age, --.

Percent of area covered, 1.07. Estimated number of infested trees, 2,511.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 40.54 | 50.28 | .598 | 1.48 | .876 | 2.16 | 7.63 | 18.8 |

Past losses as indicated by the snag data show a large percent of the green white pine stand as having been destroyed.

Falls Creek Unit

On a flat area near the mouth of Falls Creek and on the adjoining lower slopes many of the residual white pine trees left after logging have been attacked by the mountain pine beetle.

Size of area, 160 acres. Average D.B.H. 10.

Survey sample, 9.4 acres. Estimated age, 80.

Percent of area covered, 5.9. Estimated number of infested trees, 200.

| Green Trees Per Acre | | Mountain Pine Beetle Killed White Pine - Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Attacked 1946 | | Attacked 1945 | | Standing WP Snags | |
| White Pine | Other Species | Number | % Green W. P. | Number | % Green W. P. | Number | % Green W. P. |
| 23.4 | 17.4 | 1.25 | -- | 2.98 | -- | 34.7 | -- |

It is doubtful if insects are the primary agency responsible for the death of these trees. A more plausible explanation would be the extreme change in the local environment following logging.

ST. JOE NATIONAL FOREST

No dangerous infestations recorded.

CLEARWATER NATIONAL FOREST

No dangerous infestations recorded.

SUMMARY OF INDIVIDUAL TABULATIONS

| Name of Unit | Green Trees Per Acre: White Pine | Green Trees Per Acre: Other Species | Mountain Pine Beetle Killed White Pine Per Acre: Attacked 1946: Number | Attacked 1946: % Green W. P. | Attacked 1945: Number | Attacked 1945: % Green W. P. |
|---|---|---|---|---|---|---|
| **KOOTENAI NATIONAL FOREST** | | | | | | |
| North Fork of Keeler Creek | 20.1 | 56.7 | .23 | 1.1 | .43 | 2.1 |
| Area South of Beetle Creek | 16.6 | 58.5 | None | None | .07 | .40 |
| Area North of Beetle Creek | 21.3 | 64.0 | .273 | 1.3 | .18 | .85 |
| **KANIKSU NATIONAL FOREST** | | | | | | |
| Experiment Station | -- | -- | .17 | -- | .45 | -- |
| Nickelplate | -- | -- | .78 | -- | .9 | -- |
| Big Meadow | 11.2 | 21.4 | .226 | 2.08 | .51 | 4.6 |
| Bismark Meadows | -- | -- | .156 | -- | -- | -- |
| **COEUR D'ALENE NATIONAL FOREST** | | | | | | |
| Upper Cougar Cr. | 19.2 | 26.8 | .155 | .81 | .33 | 1.70 |
| Lower Flat Creek | 20.5 | 30.1 | .377 | 1.84 | .094 | .46 |
| Omaha Creek | 25.4 | 30.1 | .965 | 3.8 | .464 | 1.8 |
| Indian Creek | | | | | | |
| Area I | 23.5 | 30.5 | .408 | 1.74 | .357 | 1.52 |
| Area II | 38.3 | 27.6 | 1.32 | 3.44 | .44 | 1.15 |
| Clay Creek | 41.3 | 42.7 | .263 | .64 | .438 | 1.06 |
| Can Creek | 21.9 | 34.7 | .333 | 1.50 | .69 | 3.15 |
| West Fork | 28.8 | 51.8 | .20 | .7 | .18 | .63 |
| Forks Cabin | 30.7 | 41.3 | .680 | 2.21 | .631 | 2.06 |
| Downey Creek | 45.7 | 18.8 | 1.67 | 3.64 | 1.44 | 3.14 |
| Yellow Dog Creek | 54.6 | 23.2 | 2.39 | 4.37 | 2.50 | 4.66 |
| Yellow Dog River | 43.07 | 36.79 | .25 | .58 | .57 | 1.33 |
| Sissons | 40.54 | 50.28 | .598 | 1.48 | .876 | 2.16 |
| Falls Creek | 23.4 | 17.4 | 1.25 | -- | 2.98 | -- |

## CONCLUSIONS

It is difficult to draw conclusions from these data for the purpose of recommending control. A large sum of money is involved, and although this should not influence ones recommendations, the seemingly impossibility of obtaining such an appropriation, does, unwittingly perhaps, have an influencing effect. However, an attempt will be made to base conclusions upon existing facts only.

On the Kootenai National Forest the Pete Creek infestation appears again as a situation requiring first consideration for that area. Although the infested trees within this area should be treated, there is quite obviously a place in this process of holding an area, when further action is unwarranted. In this situation it is believed that the values at stake fully warrant the required action.

On the Kaniksu National Forest there are several areas where more detailed examinations and surveys should be made during the coming season. No further action is considered as being necessary.

There are a number of areas on the Coeur d'Alene National Forest where the institution of control is necessary as a means of protecting existing timber values. There are some 20,000 infested trees on these areas which would require $120,000 for an overall program of control. The elimination of any of these areas would be quite difficult, except perhaps that portion of Steamboat which is to be logged in 1947. This is a large sum of money, but if control is justified for any of the units, it can likewise be justified for all. On the other hand smaller sums of money can be used in combatting any of the several "hot spots" of infestation which exist. It is recognized that this is a peculiar and somewhat abstract recommendation, but there seems no other position to take.